PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Metrological COM IN TEC Services, S.C.

La Fuente #11, Colonia Fraccionamiento Granjas Banthi
San Juan del Rio, Querétaro, México. C.P. 76805

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Optical, Chemical, Dimensional, Thermodynamic, Mass, Force and Weighing Devices, Mechanical and Electrical Calibration

(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen

President

Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
September 14, 2019	September 12, 2021	November 30, 2023

Accreditation No.:	*Certificate No.:*
71793	L21-555-1

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

Metrological COM IN TEC Services, S.C.

La Fuente #11, Colonia Fraccionamiento Granjas Banthi
San Juan del Rio, Querétaro, México. C.P 76805
Contact Name: María del Refugio Castañeda Avelar Phone: 427-138-1209

Accreditation is granted to the facility to perform the following calibrations:

Optical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Reflectance Color[FO] Spectrometers, Reflectance Geometric d/0°	CIE L*: 0 to 100 CIE a*: -80 to 80 CIE b*: -80 to 80	L*: 0.5 a*: 0.4 b*: 0.25	Ceramic Tiles Konica Minolta Model: BCRA CENAM Technical Guide
Reflectance Color[FO] Spectrometers, Geometric 45/0° CIE Lab	400 n·m to 700 n·m 0 % reflectance to 100 % reflectance CIE L*: 0 to 100 CIE a*: -80 to 80 CIE b*: -80 to 80	1.2 % of reading L*:0.11 a*: 0.08 b*: 0.06	
Reflectance Color[FO] Spectrometers, Geometric d/8 CIE Lab	400 n·m to 700 n·m 0 % reflectance to 100 % reflectance CIE L*: 0 to 100 CIE a*: -80 to 80 CIE b*: -80 to 80	1.9 % of reading L*: 0.22 a*: 0.15 b*: 0.04	
Transmittance Spectrophotometers[FO]	10 % T to 50 % T Spectral Bandwidth (1 n·m)	0.15 % T	Neutral Density Glass Filters, Interference Filters CENAM Technical Guide
	λ :279 n·m to 638 n·m Bandwidth (1 n·m)	0.11 n·m	
	λ :431 n·m to 880 n·m Bandwidth (1 n·m)	0.13 n·m	
Gloss Meters[FO] Fixed Points	Angle 20°: 94 Gloss Units	0.14 Gloss Units	High Gloss Glass ASTM D-523-14 (2018)
	Angle 60°: 96 Gloss Units	0.15 Gloss Units	
	Angle 85°: 100 Gloss Units	0.18 Gloss Units	
Ev Illuminance[FO]	10 Lux to 2 900 Lux	1.9 % of reading	Light Meter Reference ASTM D1729-16
Ev Light Color[FO]	2 856 K	22 K	
Haze Meter[FO]	1 % Haze	0.3 % Haze	Haze-Filters ASTM D1003
	2 % Haze	0.3 % Haze	
	10 % Haze	0.3 % Haze	
	20 % Haze	0.3 % Haze	
	30 % Haze	0.3 % Haze	
Refractometer[FO]	0 °Brix to 90 °Brix	0.031 °Brix	Refractometer Atago RX-5000 i-Plus / Standard Solutions OIML R 124
Refractive Index[FO]	1.333 nD to 1.532 nD	0.000 07 nD	

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Chemical

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CAP Type Viscometer / Reometer[FO]	29.78 mPa.s to 3.1 mPa.s	0.3 % of reading	Paragon Viscosity Standards Standard Test Method for High-Shear Viscosity Using a Cone/Plate Viscometer ASTM D4287-00
	138.8 mPa.s to 6.32 mPa.s	0.31 % of reading	
	551.2 mPa.s to 385.3 mPa.s	0.32 % of reading	
	1 083 mPa.s to 759.6 mPa.s	0.33 % of reading	
Dynamic Viscometers Rotational[FO]	1 000 mPa·s	4 mPa·s	Viscosity Standards Cannon CENAM Technical Guide
	5 000 mPa·s	21 mPa·s	
Dynamic Viscometers Rotational[FO]	12 500 mPa·s	55 mPa·s	
pH Meters (Potential of Hydrogen)[FO]	4 pH to 10 pH	0.012 pH	pH Buffer Solutions CENAM Technical Guide
Conductivity Meters Fixed Points[FO]	100 µS/cm	0.4 µS/cm	Conductivity Solutions CENAM Technical Guide
	1 408 µS/cm	3.2 µS/cm	
Kinematic Viscosity[F]	118.5 mm^2/sec	0.34 mm^2/sec	Viscosity Standards Cannon CENAM Technical Guide
	396.5 mm^2/sec	1.1 mm^2/sec	

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Thickness Gages[FO]	50 µm	0.21 µm	Thickness Gages CENAM Technical Guide
	300 µm	0.64 µm	
	1 000 µm	0.64 µm	
Micrometers[F]	0.5 mm to 252 mm	0.001 3 mm	Master Gage Blocks CENAM Technical Guide
Calipers[F]	0.5 mm to 252 mm	0.01 mm	

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Liquid in Glass Thermometer[F]	25 °C to 150 °C	0.7 °C	RTD Digital and Temperature Bath CENAM Technical Guide
Bimetal Thermometer[F]	25 °C to 400 °C	0. 65 °C	RTD Digital and Dry Well CENAM Technical Guide

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Accreditation is granted to the facility to perform the following calibrations:

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Indicators Temperature with Thermocouple Type E[FO]	25 °C to 400 °C	0.52 °C	RTD Digital and Dry Well CENAM Technical Guide
Indicators Temperature with Thermocouple Type J[FO]	25 °C to 400 °C	0.5 °C	
Indicators Temperature with Thermocouple Type K[FO]	25 °C to 400 °C	0.5 °C	RTD Digital and Dry Well CENAM Technical Guide
Indicators Temperature with Thermocouple Type T[FO]	25 °C to 400 °C	0.52 °C	
Digital Thermometer[FO]	25 °C to 400 °C	0.52 °C	
Digital Thermometer[F]	25 °C to 60 °C	0.26 °C	RTD Digital and Chamber Climatic CENAM Technical Guide
Humidity Meter[F]	10 % HR to 80 % HR	0.78 % HR	Hygrometer Digital CENAM Technical Guide

Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Analytical Balances[O]	1 mg to 200 g (Res.= 0.1 mg)	0.3 mg	Class OIML E2 Weights CENAM Technical Guide
Balances[O]	10 mg to 500 g (Res.= 0.2 mg)	0.7 mg	
	200 g to 5 000 g (Res.= 0.005 g)	6.3 mg	
	5 kg to 10 kg (Res.= 0.1 g)	0.6 g	Class OIML M1 Weights CENAM Technical Guide
Scales[O]	10 kg to 100 kg (Res.= 20 g)	18 g	
	100 kg to 200 kg (Res.= 20 g)	18 g	
	100 kg to 200 kg (Res.= 10 g)	10 g	
	100 kg to 250 kg (Res.= 20 g)	18 g	
	200 kg to 300 kg (Res.= 50 g)	42 g	

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Accreditation is granted to the facility to perform the following calibrations:

Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Mass Weight Class F1, F2[F]	1 g	0.007 mg	Double Substitution Class E2 Weights Set CENAM Technical Guide
	2 g	0.015 mg	
	5 g	0.018 mg	
	10 g	0.021 mg	
Mass Weight Class F1, F2[F]	20 g	0.028 mg	
	50 g	0.034 mg	
	100 g	0.078 mg	
	200 g	0.12 mg	
Force – Tension (Dynamometer, Universal Machine and Load Cells)[FO]	20 N to 1 000 N	$(3.93 \times 10^{-3} + 7.75 \times 10^{-3}F)$ N	OIML Class M1 ASTM E4 CENAM Technical Guide
Force – Compression (Dynamometer, Universal Machine and Load Cells)[FO]	20 N to 1 000 N	$(3.93 \times 10^{-3} + 7.75 \times 10^{-3}F)$ N	

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Vacuum Gauges[F]	-12 psi to 0 psi	0.019 psi	Digital Pressure Gauge CENAM Technical Guide
Pressure Gauges and Transducer[F]	Up to 300 psi	0.08 psi	

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B[FO]	720 °C to 1 690 °C	0.67 °C	Temperature Calibrator Nagman with Model 14+ Electrical Simulation of Thermocouple Output Euramet cg-11
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	-25 °C to 0 °C	0.32 °C	
	0 °C to 765 °C	0.33 °C	

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Accreditation is granted to the facility to perform the following calibrations:

Electrical

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Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-30 °C to 0 °C	0.32°C	Nagman with model 14+ Electrical Simulation of Thermocouple Output Temperature Calibrator Euramet cg-11
	0 °C to 1 000 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-50 °C to 0 °C	0.32 °C	
	0 °C to 1 230 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N[FO]	-100 °C to 0 °C	0.32 °C	
	0 °C to 1 170 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R[FO]	170 °C to 1 590 °C	0.67 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S[FO]	170 °C to 1 590 °C	0.57 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T[FO]	-50 °C to 0 °C	0.41 °C	
	0 °C to 360 °C	0.42 °C	
Temperature Calibration. Indication and Control Equipment used with RTD Pt 100 (27.08 Ω to 360.55 Ω)[FO]	-100 °C to 0 °C	1.3 °C	Temperature Calibrator Nagman with model 14+ Electrical Simulation of RTD Output Euramet cg-11
	0 °C to 630 °C	0.81 °C	
Equipment to Measure Voltage[FO]	10 mV to 90 mV (Res.= 0.005 mV)	0.03 mV	Temperature Calibrator Nagman with model 14+ Euramet cg-11
Equipment to Measure Voltage[FO]	100 mV to 900 mV (Res.= 0.05 mV)	0.14 mV	

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.

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Accreditation is granted to the facility to perform the following calibrations:

2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.

3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration at its fixed location.

4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^{O} would mean that the laboratory performs this calibration onsite at the customer's location.

5. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.

6. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.

7. The term T represents torque in N•m (including SI multiple and submultiple units) for the international system of units (the SI) or ozf•in, lbf•in and lbf•ft for the USC system of units.

8. The term F represents Force in N (including SI multiple and submultiple units) for the international system of units (the SI) or lbf for the USC system of units.

9. Metrological COM IN TEC Services, S.C. located at Calle Zacamixtle # 108, Col. Petrolera Delegación Azcapotzalco, Ciudad de México, México. C.P. 02480 (Certificate number L21-555) is the parent location connected to this scope of accreditation